

# **The Harman Kardon Model hk775**

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## **Monophonic Amplifier**

### **Technical Manual**

## PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.

## ALIGNMENT PROCEDURES

### DC VOLTAGE BALANCE ADJUSTMENT

Equipment Required: DC Voltmeter

| Connect Output Meter To           | Adjust | Adjust For    |
|-----------------------------------|--------|---------------|
| DC voltmeter to SPEAKER terminals | VR401  | 0V $\pm$ 10mV |

### IDLING CURRENT ADJUSTMENT

Equipment Required: DC Voltmeter

| Connect Output Meter To             | Adjust | Adjust For |
|-------------------------------------|--------|------------|
| DC voltmeter to TP1 (+) and TP2 (—) | VR402  | 36mV       |

## ALIGNMENT PROCEDURES

### POWER LEVEL DISPLAY SENSITIVITY ADJUSTMENT

**Equipment Required:** Audio Signal Generator and AC VTVM

- Notes:**
1. Connect signal source to INPUT jack.
  2. Press in DISPLAY SENS. push button to  $\times 0.1$  (button in) position.

| Step | Signal Source                | Connect Output Meter To                           | Adjust                     | Adjust For                    |
|------|------------------------------|---------------------------------------------------|----------------------------|-------------------------------|
| 1    | 1 kHz                        | 8 ohm dummy load and AC VTVM to SPEAKER terminals | Signal source output level | 12.65V on AC VTVM             |
| 2    | 1 kHz,<br>-1 dB output level | _____                                             | VR1                        | Topmost LED lights to glimmer |

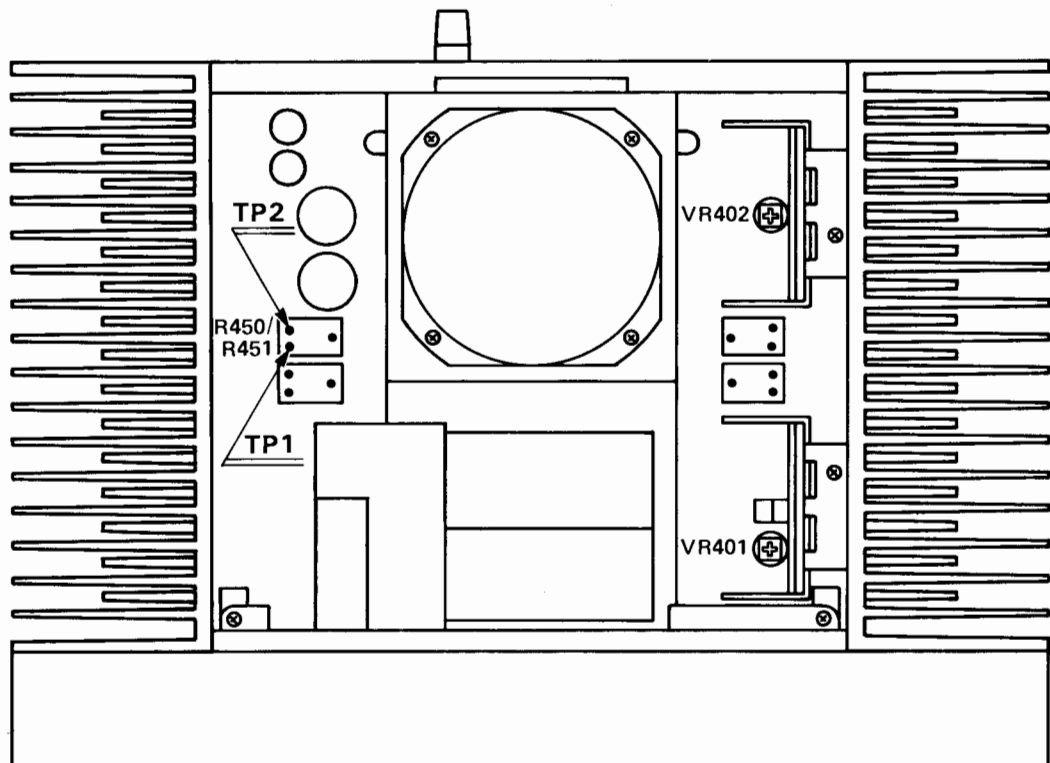


Fig. 1 – Alignment Points Location

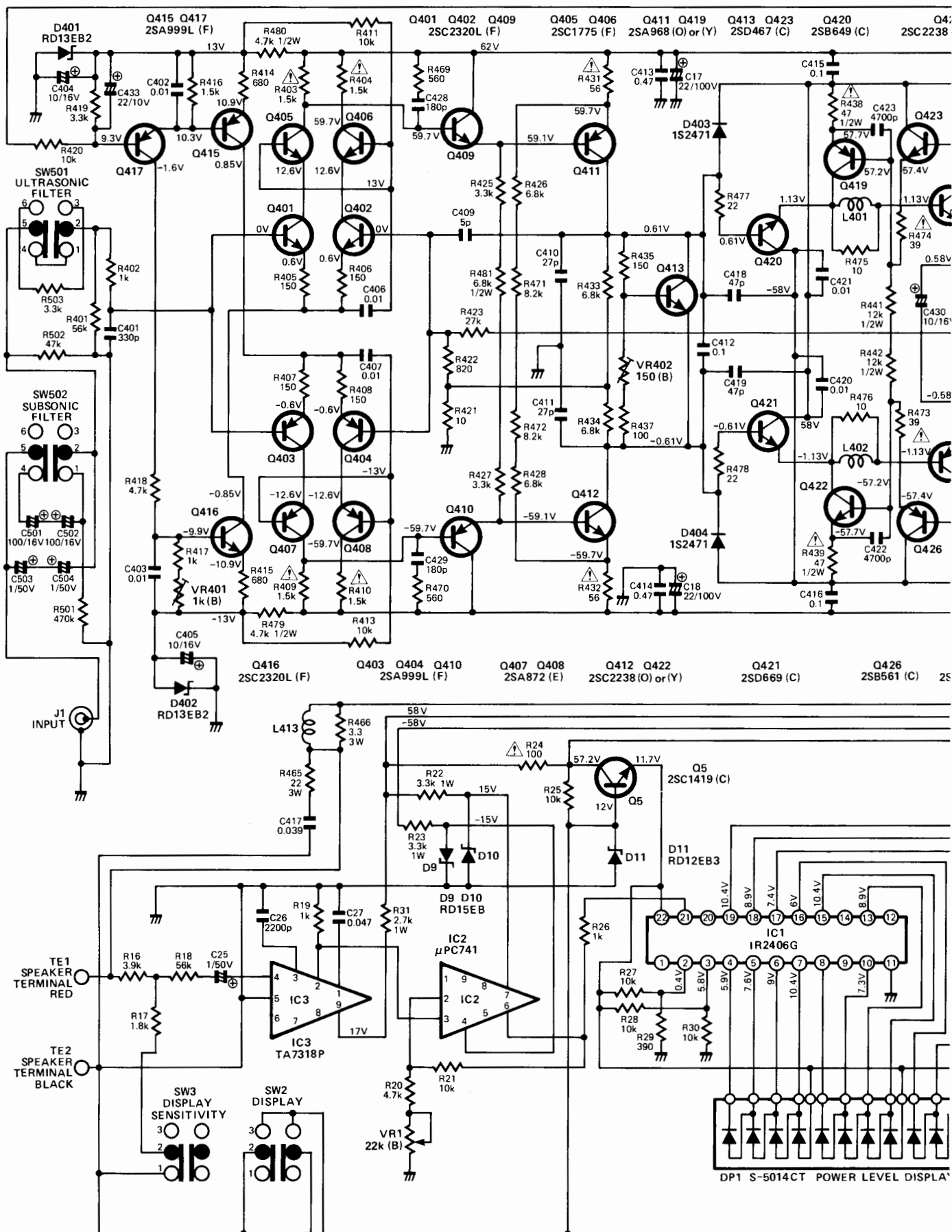
This exploded view diagram illustrates the assembly of a power supply unit. The components are labeled with numbers and letters, and their assembly points are indicated by dashed lines. Key components include:

- TE1, TE2:** Terminals at the top left.
- SO1:** A switch or connector near the terminals.
- 142:** A cable or connector.
- 175:** A component, possibly a fuse or switch, near the cable.
- FH1:** A component, possibly a fuse holder, near the cable.
- FU1:** A fuse near the cable.
- 102:** A top cover or chassis part.
- 164:** A component, possibly a transformer or inductor, near the top cover.
- 101:** A large rectangular component, possibly a power output or protection board, near the top cover.
- 167:** A component, possibly a capacitor or inductor, near the top cover.
- 155:** A component, possibly a power output or protection board, near the top cover.
- 169:** A component, possibly a power output or protection board, near the top cover.
- 166:** A component, possibly a power output or protection board, near the top cover.
- 170:** A component, possibly a power output or protection board, near the top cover.
- 137:** A component, possibly a power output or protection board, near the top cover.
- 149:** A component, possibly a power output or protection board, near the top cover.
- 153:** A component, possibly a power output or protection board, near the top cover.
- 158:** A component, possibly a power output or protection board, near the top cover.
- 154:** A component, possibly a power output or protection board, near the top cover.
- 152:** A component, possibly a power output or protection board, near the top cover.
- 179:** A component, possibly a power output or protection board, near the top cover.
- 136:** A component, possibly a power output or protection board, near the top cover.
- 189:** A component, possibly a power output or protection board, near the top cover.
- 151:** A component, possibly a power output or protection board, near the top cover.
- 148:** A component, possibly a power output or protection board, near the top cover.
- 162:** A component, possibly a power output or protection board, near the top cover.
- 105:** A component, possibly a power output or protection board, near the top cover.
- 186:** A component, possibly a power output or protection board, near the top cover.
- 104:** A component, possibly a power output or protection board, near the top cover.
- 126:** A component, possibly a power output or protection board, near the top cover.
- 216:** A component, possibly a power output or protection board, near the top cover.
- 143:** A component, possibly a power output or protection board, near the top cover.
- 245:** A component, possibly a power output or protection board, near the top cover.
- 116:** A component, possibly a power output or protection board, near the top cover.
- 119:** A component, possibly a power output or protection board, near the top cover.
- 115:** A component, possibly a power output or protection board, near the top cover.

The diagram also shows the following boards and components:

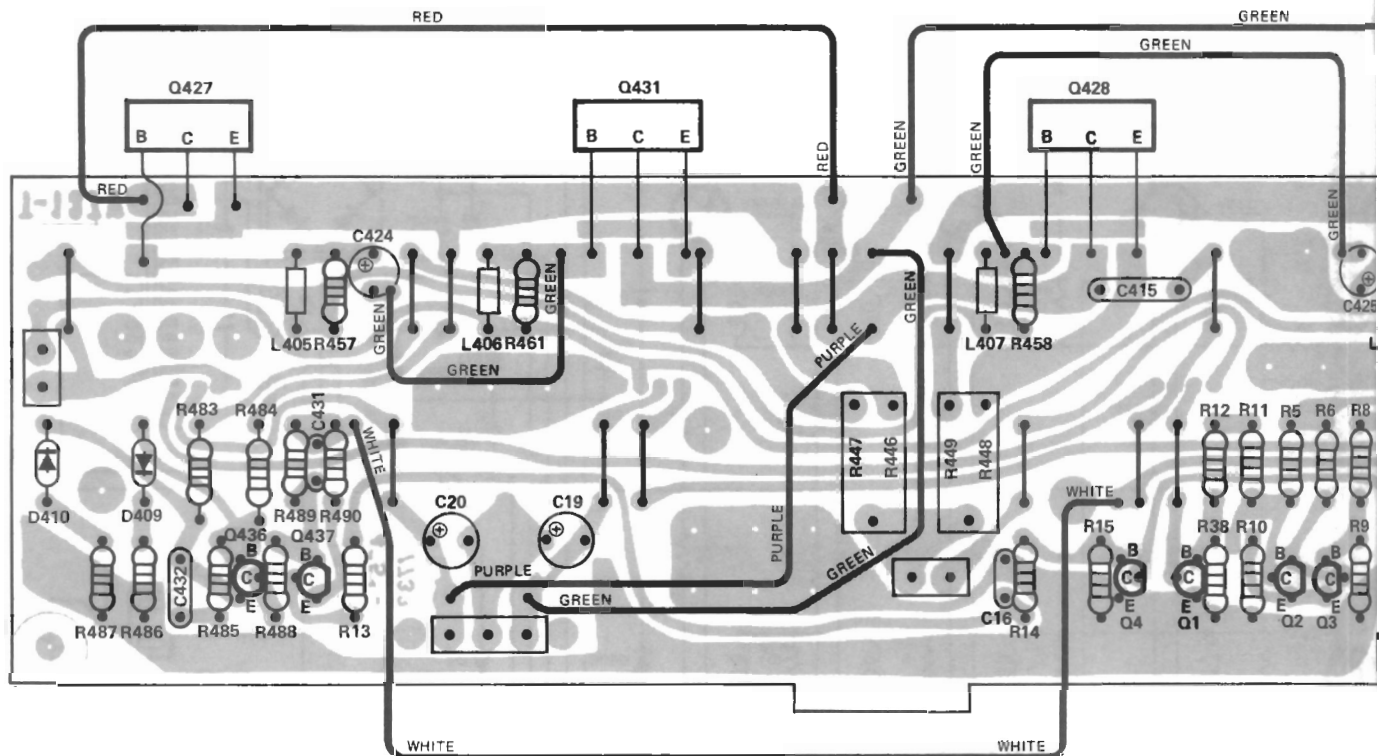
- DRIVER P.C. BOARD:** A board with various components, including a transformer and capacitors.
- POWER SUPPLY P.C. BOARD:** A board with various components, including a transformer and capacitors.
- POWER OUTPUT & PROTECTION P.C. BOARD:** A board with various components, including a transformer and capacitors.
- PRE DRIVER P.C. BOARD:** A board with various components, including a transformer and capacitors.
- POWER LEVEL DISPLAY DRIVER P.C. BOARD:** A board with various components, including a transformer and capacitors.
- POWER OUTPUT & RECTIFIER P.C. BOARD:** A board with various components, including a transformer and capacitors.
- SW1:** A switch component.
- DP1:** A component, possibly a display or indicator, near the bottom right.
- D7:** A component, possibly a diode or transistor, near the bottom right.

### SCHEMATIC DIAGRAM

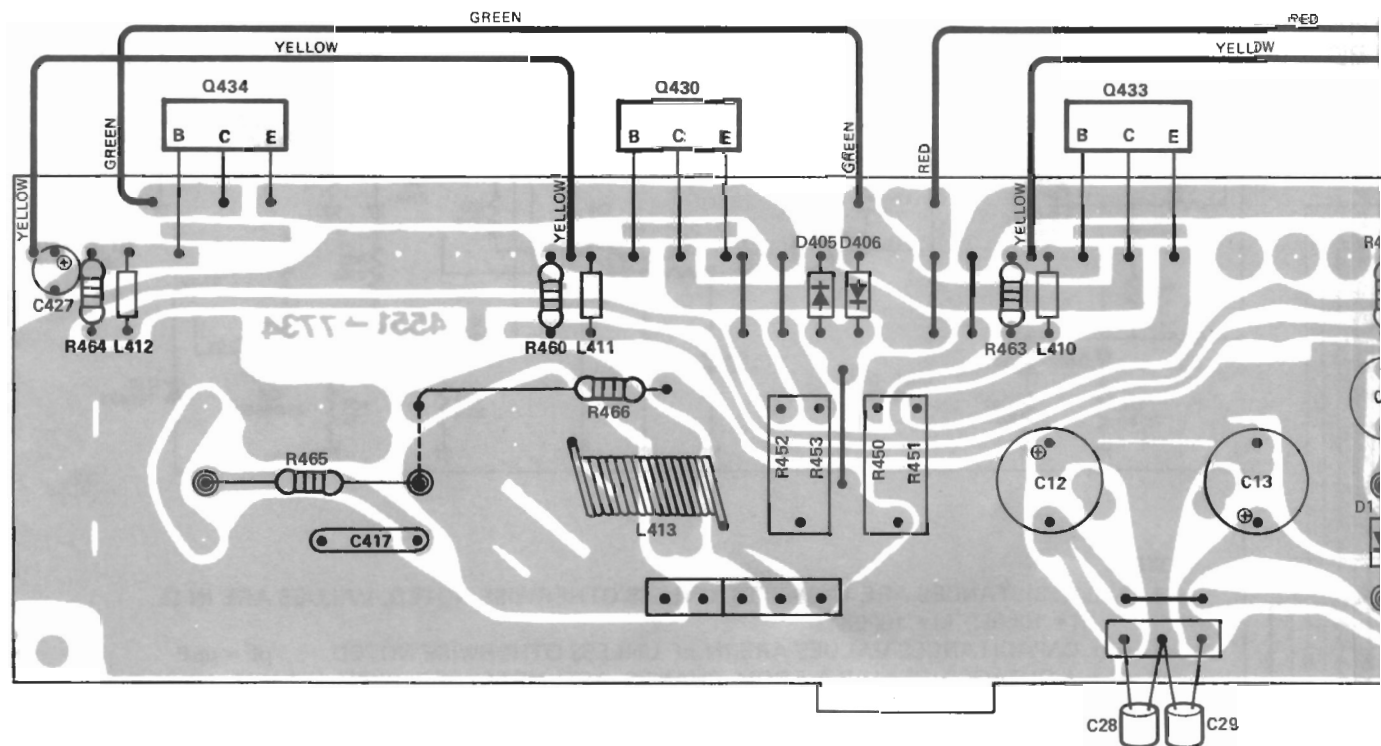


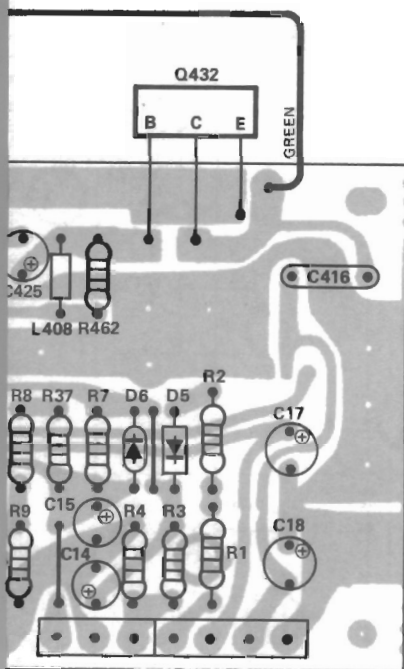


## POWER OUTPUT & PROTECTION P.C. BOARD

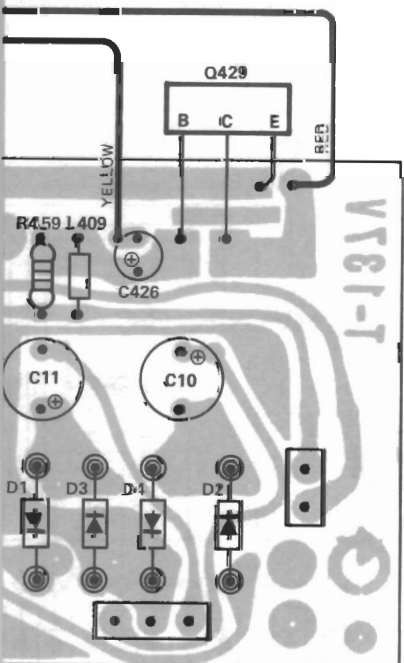


## POWER OUTPUT & RECTIFIER P.C. BOARD



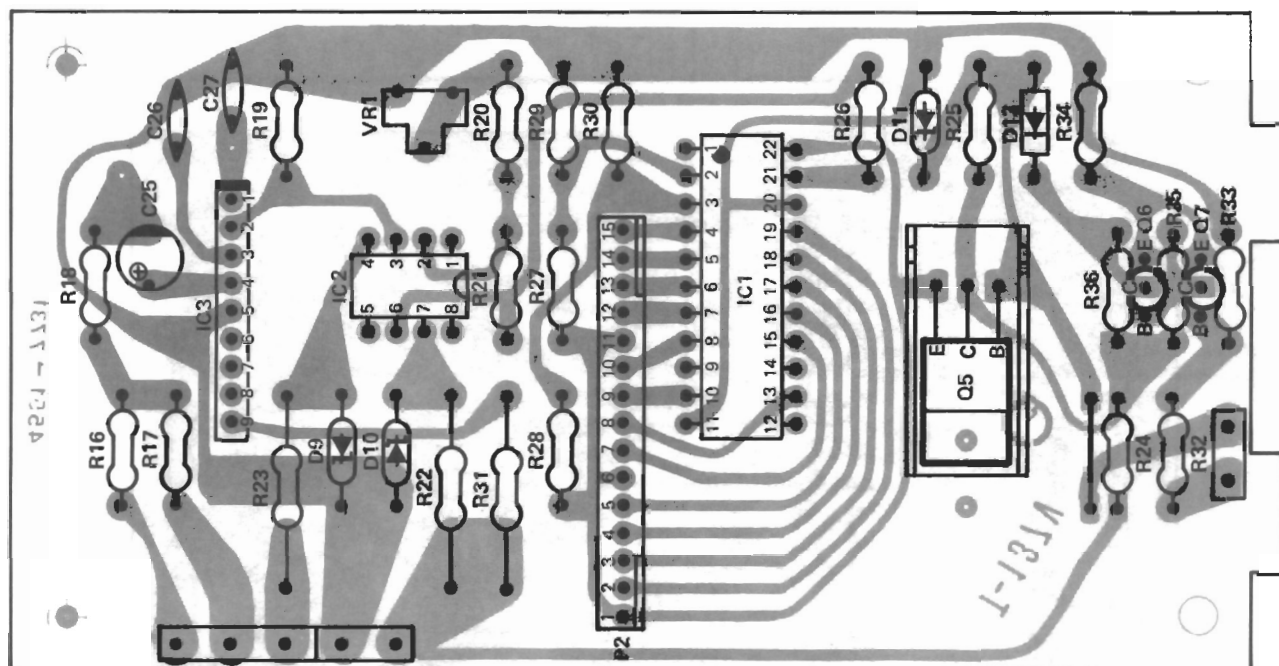


| Ref. No.                        | Part No.      | Description                          |
|---------------------------------|---------------|--------------------------------------|
| <b>RESISTORS, CEMENT</b>        |               |                                      |
| R446/447,<br>448/449            | 5273-R33672   | 0.33Ω ±10% 3W×2 Special Dual         |
| <b>CAPACITORS, ELECTROLYTIC</b> |               |                                      |
| C17, 18, 19, 20                 | 5345-228J0211 | 22μF ±20% 100V                       |
| <b>TRANSISTORS</b>              |               |                                      |
| Q1, 2, 3, 4                     | 5613-2603(F)  | 2SC2603(F) Overload Protector/Muting |
| Q427, 428                       | 5613-2564(O)  | 2SC2564(O)or(R) } Power Output       |
| Q431, 432                       | 5611-1094(O)  | 2SA1094(O)or(R) }                    |
| Q436                            | 5613-1775(F)  | 2SC1775(F) } Overload Protector      |
| Q437                            | 5611-872(E)   | 2SA872(E) }                          |
| <b>DIODES</b>                   |               |                                      |
| D5                              | 5632-1SR35-20 | 1SR35-200                            |
| D6, 409, 410                    | 5636-1S2473   | 1S2473                               |
| <b>MISCELLANEOUS</b>            |               |                                      |
| L405, 406,<br>407, 408          | 5597-45502    | Ferrite Bead                         |



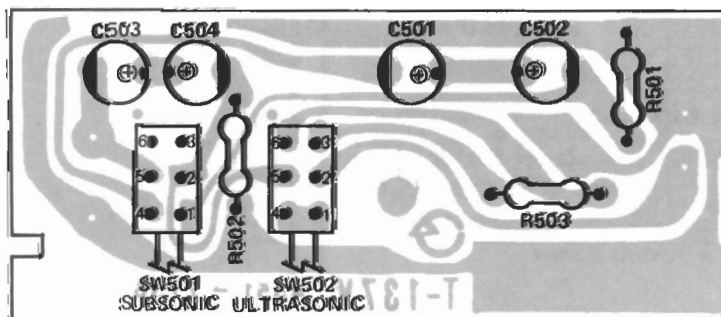
| Ref. No.                        | Part No.      | Description                    |
|---------------------------------|---------------|--------------------------------|
| <b>RESISTORS, CEMENT</b>        |               |                                |
| R450/451,<br>452/453            | 5273-R33672   | 0.33Ω ±10% 3W×2 Special Dual   |
| <b>CAPACITORS, ELECTROLYTIC</b> |               |                                |
| C10, 11                         | 5345-108-50   | 1000μF ±50% -10% 50V           |
| C12, 13                         | 5341-108H0270 | 1000μF ±20% 80V                |
| <b>TRANSISTORS</b>              |               |                                |
| Q429, 430                       | 5613-2564(O)  | 2SC2564(O)or(R) } Power Output |
| Q433, 434                       | 5611-1094(O)  | 2SA1094(O)or(R) }              |
| <b>DIODES</b>                   |               |                                |
| D1, 2, 3, 4,<br>405, 406        | 5632-10DF2    | 10DF2                          |
| <b>MISCELLANEOUS</b>            |               |                                |
| L409, 410,<br>411, 412          | 5597-45502    | Ferrite Bead                   |
| L413                            | 5991-7125     | Coil, RF Choke                 |

## POWER LEVEL DISPLAY DRIVER P.C. BOARD



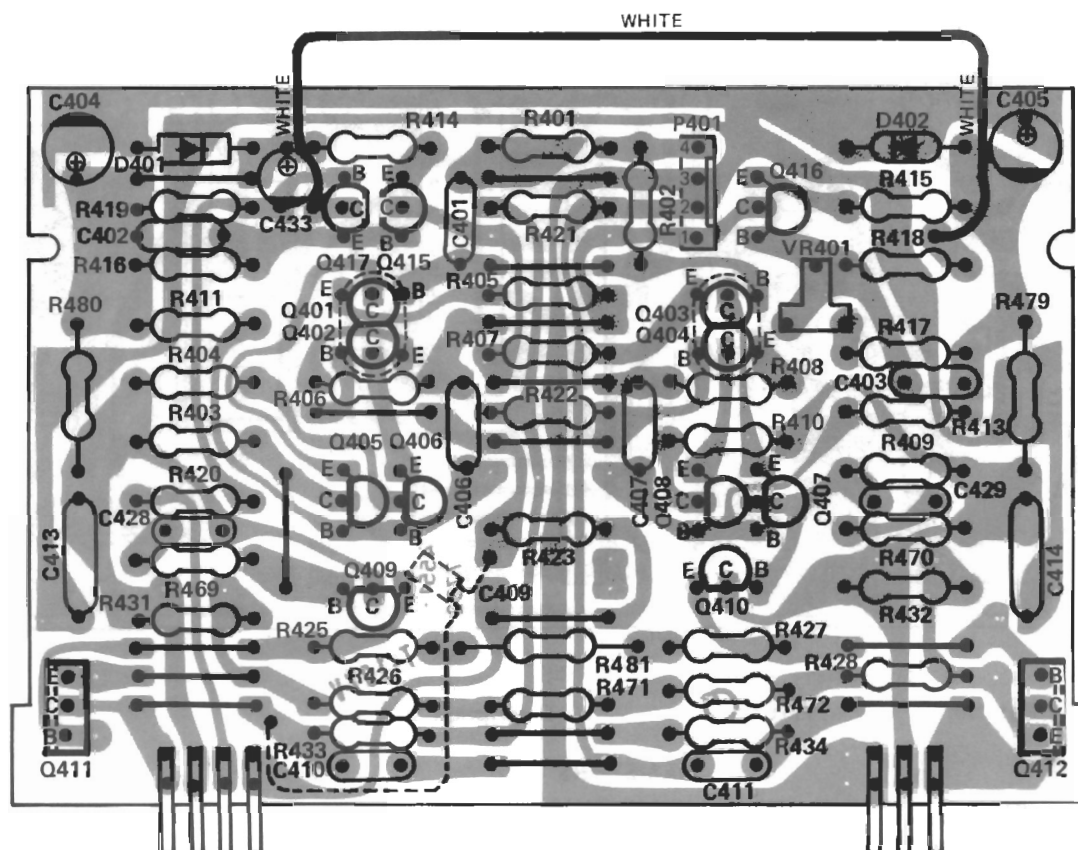
| Ref. No.                   | Part No.     | Description                        |
|----------------------------|--------------|------------------------------------|
| <b>RESISTORS</b>           |              |                                    |
| R24                        | 5102-1014713 | 100Ω ±2% 1/4W Fuse                 |
| VR1                        | 5101-2238575 | Variable Resistor, 22kΩ(B)         |
| <b>INTEGRATED CIRCUITS</b> |              |                                    |
| IC1                        | 5652-IR2406G | IR2406G Power Level Display Driver |
| IC2                        | 5652-μPC741  | μPC741 Buffer Amp.                 |
| IC3                        | 5652-TA7318P | TA7318P Linear-Log Converter       |
| <b>TRANSISTORS</b>         |              |                                    |
| Q5                         | 5613-1419(C) | 2SC1419(C) Voltage Regulator       |
| Q6, 7                      | 5613-2603(F) | 2SC2603(F) Muting                  |
| <b>DIODES</b>              |              |                                    |
| D9, 10                     | 5635-RD15EB  | Zener, RD15EB                      |
| D11                        | 5635-RD12EB3 | Zener, RD12EB3                     |
| D12                        | 5636-1S2471  | 1S2471                             |

## FILTER SWITCHES P.C. BOARD



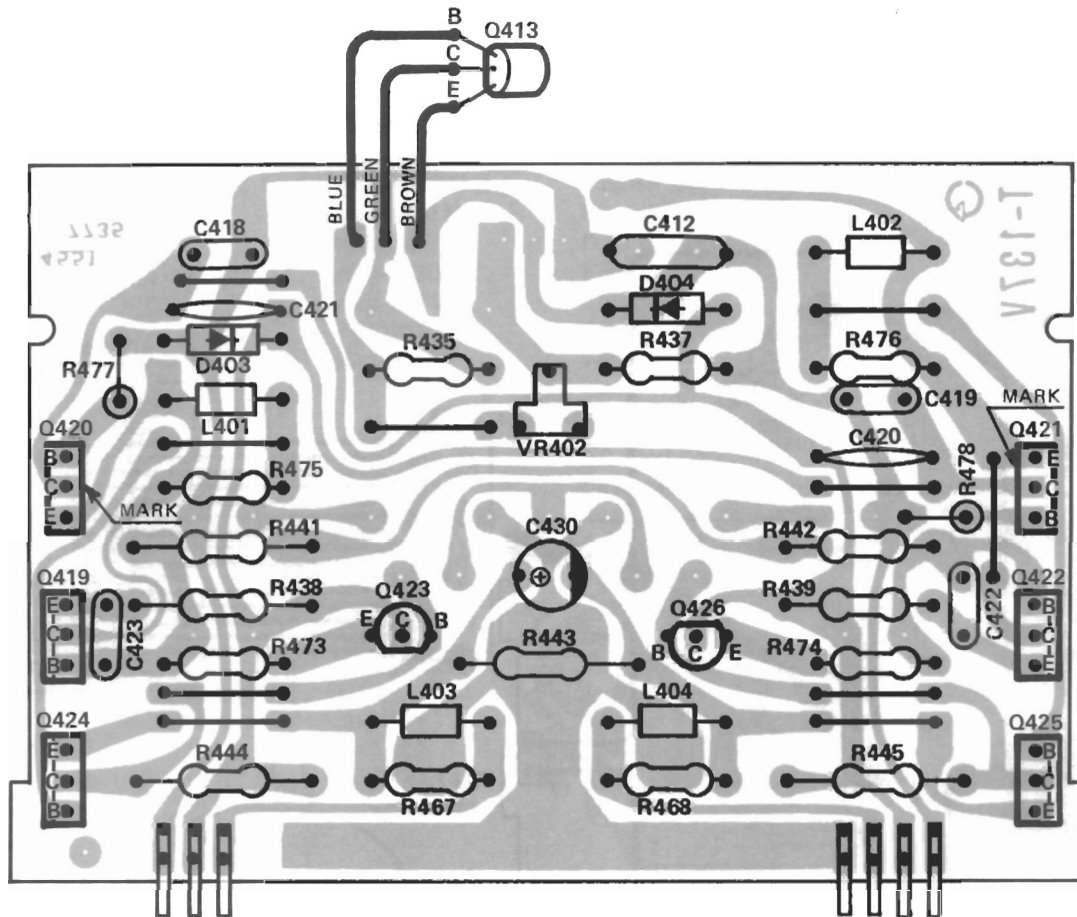
| Ref. No.      | Part No.      | Description                                           |
|---------------|---------------|-------------------------------------------------------|
| SW501,<br>502 | 4431-01027369 | Push Switch,<br>Subsonic Filter,<br>Ultrasonic Filter |

## PRE-DRIVER P.C. BOARD



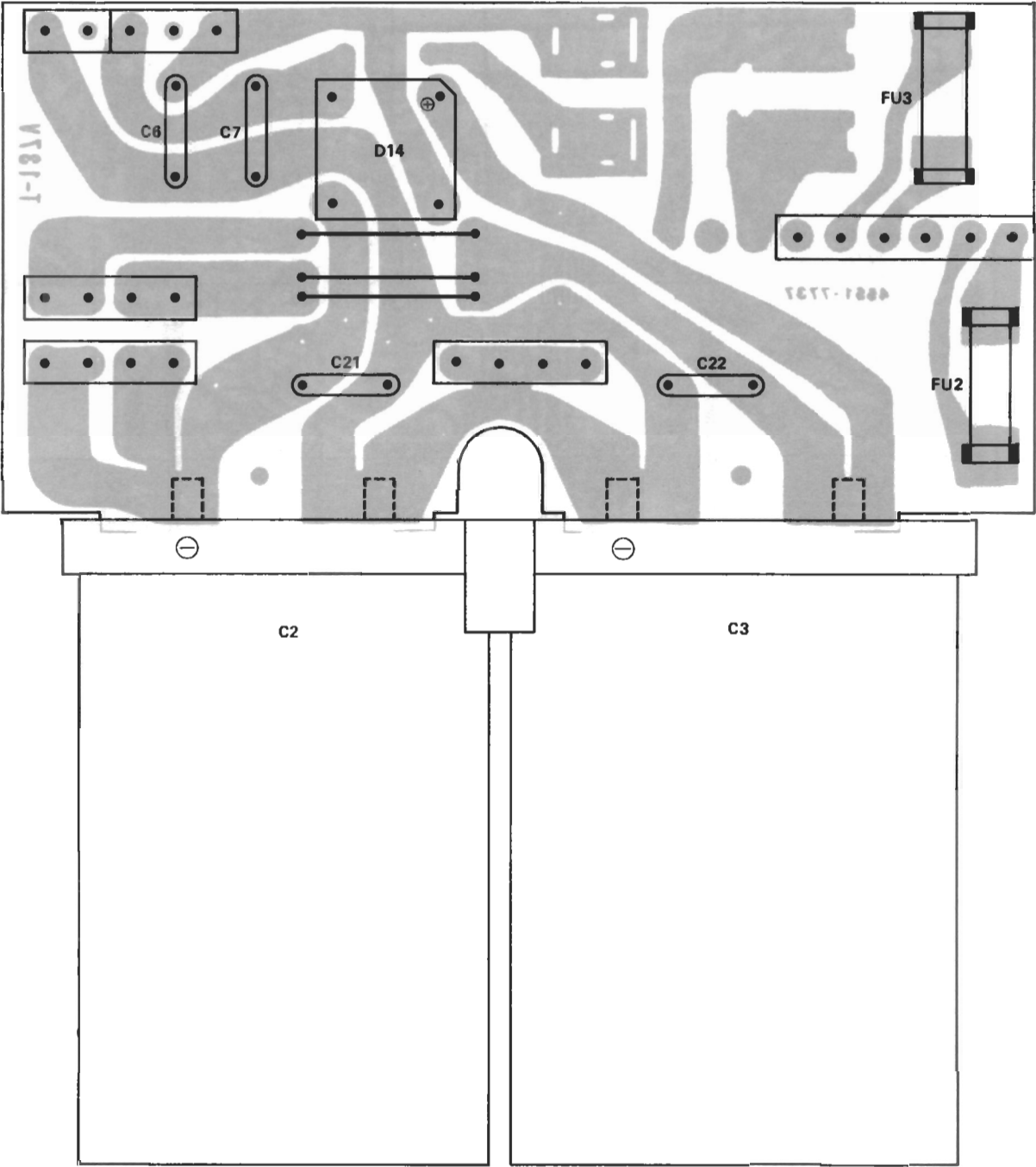
| Ref. No.               | Part No.      | Description                        |
|------------------------|---------------|------------------------------------|
| <b>RESISTORS</b>       |               |                                    |
| R403, 404,<br>409, 410 | 5102-1524713  | 1.5k $\Omega$ $\pm$ 2% 1/4W Fuse   |
| R431, 432              | 5102-5604713  | 56 $\Omega$ $\pm$ 2% 1/4W Fuse     |
| VR401                  | 5101-1027875  | Variable Resistor, 1k $\Omega$ (B) |
| <b>TRANSISTORS</b>     |               |                                    |
| Q401, 402              | 5613-2320L(F) | 2SC2320L(F)                        |
| Q403, 404              | 5611-999L(F)  | 2SA999L(F)                         |
| Q405, 406              | 5613-775(F)   | 2SC775(F)                          |
| Q407, 408              | 5611-872(E)   | 2SA872(E)                          |
| Q409                   | 5613-2320L(F) | 2SC2320L(F)                        |
| Q410                   | 5611-999L(F)  | 2SA999L(F)                         |
| Q411                   | 5611-968(O)   | 2SA968(O) or (Y)                   |
| Q412                   | 5613-2238(O)  | 2SC2238(O) or (Y)                  |
| Q415, 417              | 5611-999L(F)  | 2SA999L(F)                         |
| Q416                   | 5613-2320L(F) | 2SC2320L(F)                        |
| <b>DIODES</b>          |               |                                    |
| D401, 402              | 5635-RD13EB2  | Zener, RD13EB2                     |

# DRIVER P.C. BOARD



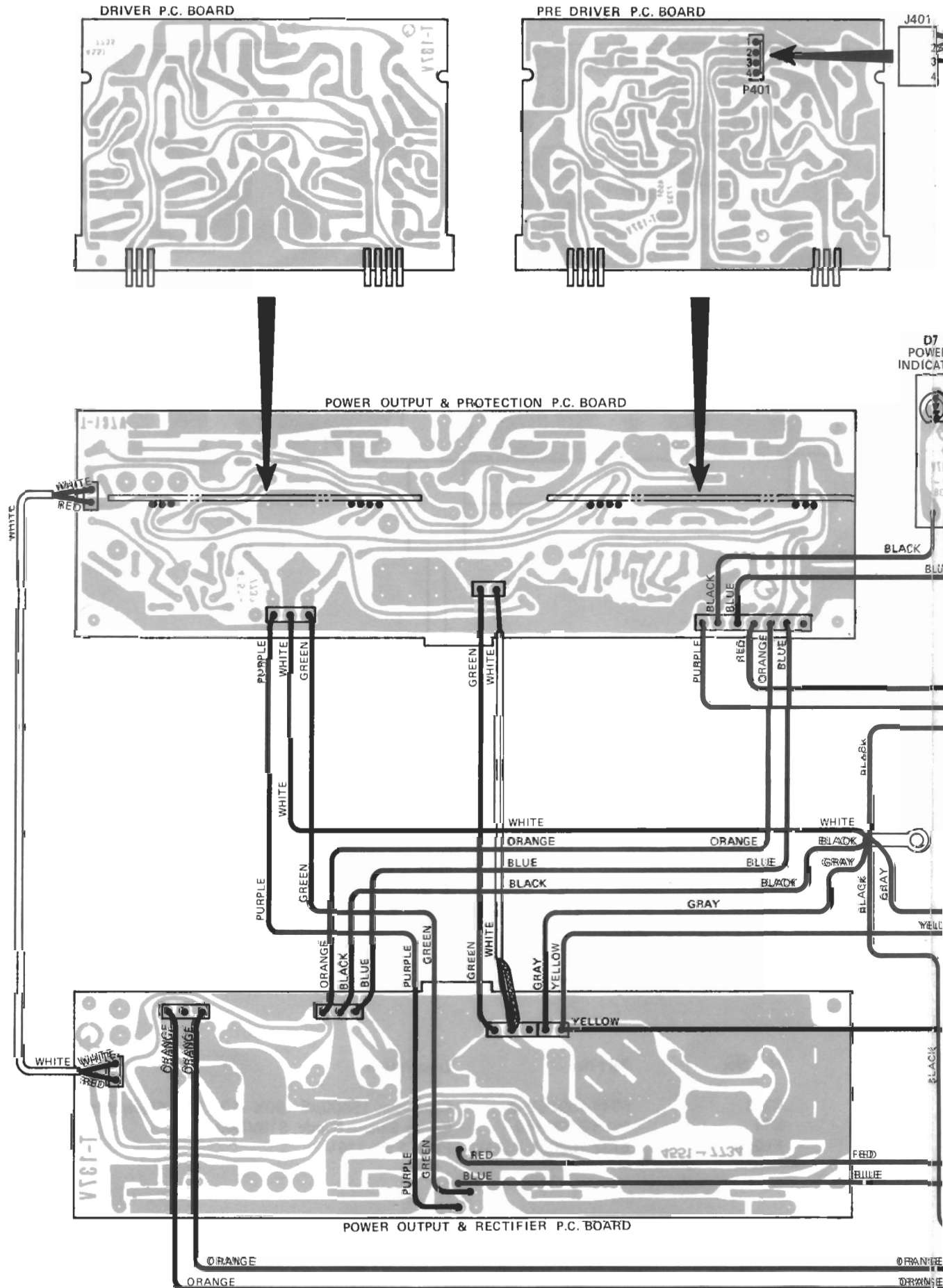
| Ref. No.             | Part No.     | Description                  |
|----------------------|--------------|------------------------------|
| <b>RESISTORS</b>     |              |                              |
| R438, 439            | 5102-4705114 | 47Ω ±5% 1/2W Fuse            |
| R443                 | 5102-2705114 | 27Ω ±5% 1/2W Fuse            |
| R473, 474            | 5102-3904713 | 39Ω ±2% 1/4W Fuse            |
| VR402                | 5101-1517475 | Variable Resistor, 150Ω(B)   |
| <b>TRANSISTORS</b>   |              |                              |
| Q413                 | 5614-467(C)  | 2SD467(C) Bias Stabilization |
| Q419, 425            | 5611-968(O)  | 2SA968(O)or(Y)               |
| Q420                 | 5612-649(C)  | 2SB649(C)                    |
| Q421                 | 5614-669(C)  | 2SD669(C)                    |
| Q422, 424            | 5613-2238(O) | 2SC2238(O)or(Y)              |
| Q423                 | 5614-467(C)  | 2SD467(C)                    |
| Q426                 | 5612-561(C)  | 2SB561(C)                    |
| <b>DIODES</b>        |              |                              |
| D403, 404            | 5636-1S2471  | 1S2471                       |
| <b>MISCELLANEOUS</b> |              |                              |
| L401, 402, 403, 404  | 5597-45502   | Ferrite Bead                 |

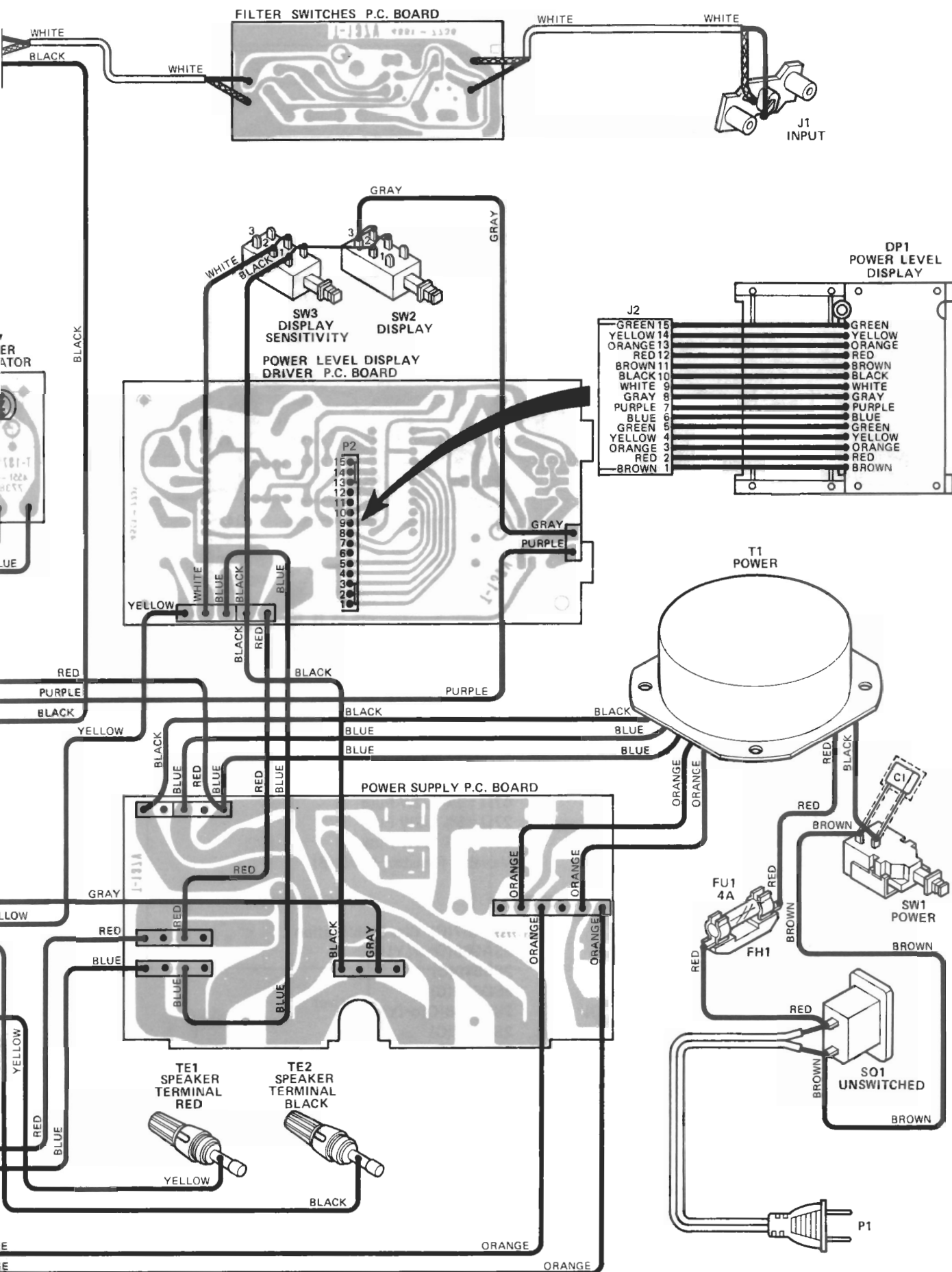
POWER SUPPLY P.C. BOARD



| Ref. No. | Part No.      | Description                                        |
|----------|---------------|----------------------------------------------------|
| C2, 3    | 5341-159Z0272 | Capacitor, 15000 $\mu$ F +50%–10% 71V Electrolytic |
| D14      | 5685-S10VB40  | Bridge Silicon Diode, S10VB40                      |
| FU2, 3   | 5732-162031   | Fuse, 1.6A 125V                                    |

# WIRING DIAGRAM





## CHASSIS PARTS LIST

| Ref. No.            | Part No.      | Description                                                  |
|---------------------|---------------|--------------------------------------------------------------|
| <b>GENERAL UNIT</b> |               |                                                              |
| 101                 | A414-HK775    | Cabinet Top Assembly                                         |
| 102                 | A424-HK775-A  | Cabinet Back Assembly                                        |
| 103                 | A424-HK775-B  | Cabinet Bottom Assembly                                      |
| 104                 | A443-HK775    | Front Panel Assembly                                         |
| 105                 | A662-HK775    | Push Button Assembly, Display, Display Sensitivity           |
| 115                 | 1319-7330     | Foot                                                         |
| 116                 | 1319-7131     | Foot                                                         |
| 119                 | 1423-00102    | Cabinet Bottom                                               |
| 126                 | 1531-03401    | Window                                                       |
| <b>ELECTRICAL</b>   |               |                                                              |
| P1                  | 4161-7387     | AC Line Cord                                                 |
| SO1                 | 4474-152      | External AC Socket, Unswitched                               |
| SW1                 | 4431-01017358 | Push Switch, Power                                           |
| SW2, 3              | 4431-01027169 | Push Switch, Display, Display Sensitivity                    |
| T1                  | 5584-701348   | Power Transformer                                            |
| FU1                 | 5732-402028   | Fuse, 4A 125V                                                |
| FH1                 | 4472-7128     | Fuse Holder                                                  |
| C1                  | 5352-1030959  | Capacitor, 0.01 $\mu$ F $\pm$ 20% AC125V Metalized Polyester |
| J1                  | 4481-5        | Jack, Input                                                  |
| TE1                 | 4214-111      | Speaker Terminal, Red                                        |
| TE2                 | 4214-112      | Speaker Terminal, Black                                      |
| DP1                 | 5623-S-5014CT | LED Display Assembly, S-5014CT Power Level                   |
| D7                  | 5637-GL2PR1   | Light Emitting Diode, GL2PR1 Power Indicator                 |